VOODOO2 MANUAL

Table of Contents

CHAPTER 1 - OVERVIEW.....3

TECHNICAL FEATURES.....3
3D RESOLUTION AND REFRESH RATES.....4

CHAPTER 2 - HARDWARE INSTALLATION.....10

System Requirements.....10
Before you begin.....12
Checklist.....12
Handling the board.....14
Installation procedure.....16
Dual Board Installation for Scan Line Interleave (SLI).....20
TV viewing (optional).....21

CHAPTER 3 - DRIVERS INSTALLATION.....22

Windows 95 (Standard edition and OSR2 release).....22
Windows NT 4.0 Glide Drivers.....27
Windows 95 and NT4.0 Display properties.....29
Appendix.....41
A – Inside the Voodoo2 (technical).....41

FCC STATEMENT.....44

WARNING.....44

Chapter 1 - Overview

Technical Features

- 3Dfx Voodoo2 Graphics engine
- Multi-chip, 3D-only solution
- One Pixel*fx* with 4Mb frame buffer memory
- Two Texel*fx* each one with 2Mb or 4Mb texture buffer memory
- 8Mb or 12Mb total EDO memory amount
- Scan Line Interleaving allows simultaneous connection of 2 boards for increased performance
- TV-out allowing direct connection to NTSC or PAL TV screen (optional)
- 800x600 with z/buffer
- 1024x768 with z/buffer (SLI mode)
- 90 Mpixels/sec sustained fill rate (up to 180 Mpixels/sec SLI mode) with LOD MIP-mapping, Z-buffering, alpha-blending and fogging enabled
- 3M triangle/sec for filtered, LOD MIP-mapped, Z-buffered, alpha-blended, fogged, textured triangles
- Multiple textures per pixel in a single pass and special effects including fog, transparency,translucency,lighting maps,detail textures,morphing
- Full triangle setup in hardware
- Support for 2.1 PCI compliant bus
- Up to 100FPS major games speed !
- Windows 95 and Windows NT4 Glide support
- APIs supported: Glide, Direct 3D, Renderware, Brender, GlQuake driver
- Compatible with all Voodoo family titles

3D Resolution and refresh rates

Glide and Direct3D Win95 resolution

Display Mode		Refresh Rates	Color Depth
512x384 16bpp	No z-buffer With z-buffer	60, 75, 85, 120	24
640x400 16bpp	No z-buffer With z-buffer	60, 75, 85, 120	24
640x480 16bpp	No z-buffer With z-buffer	60, 75, 85, 120	24
800x600 16bpp	No z-buffer With z-buffer	60, 75, 85, 120	24 (16 at 120hz)
1024x768 16bpp	No z-buffer With z- buffer	60, 75, 85	16

*1024x768 -> SLI mode only

Chapter 2 - Hardware installation

This guide has been written for those who are familiar with the installation of PC peripherals and software applications, and as a reference for experienced users. If you are new to installing PC peripherals and software applications, follow the step-by-step instructions and figures in this manual to guide you through the installation procedure.

If you are already experienced in hardware and software installation, you may only use this guide when you need a detailed explanation about specific steps in the installation procedure. If you still have questions after using this manual, you may need to consult your dealer or computer operations guide.

System Requirements

To run the 3Dfx Voodoo2 you need the following equipment:

- An IBM or fully compatible Pentium-based or similar PC, which complies with the PCI local bus specification and which has a spare PCI bus slot.
- Any 2D or 2D/3D graphics card and a high-resolution analogue RGB SVGA monitor (multi-sync recommended).
- Windows 95 or later, or equivalent.
- ATV screen featuring a SCART or S-VHS connector (optional)

Before you begin

Before you start the installation procedure, please make sure that your computer meets the computer requirements previously specified. If you are not sure whether your computer meets the minimum requirements, contact your dealer before unpacking the 3Dfx Voodoo2 package.

Once you are sure your system meets the necessary requirements, prepare a clean workspace, and gather the tools you will need. For the installation of the kit components, you will need a small screwdriver and a container to hold the loose screws.

Carefully unpack the box contents. Leave the video board in its static-resistant packaging until later in the installation procedure. This protective packaging has been specially designed to protect the card from potential damages caused by static electricity.

Checklist

Please check that your package is complete and contains the items below. If you discover damaged or missing items, please contact your dealer.

- The 3Dfx Voodoo2 video card
- A video pass-through cable
- This User's Manual
- 1 CD Title or Diskette

Handling the board

Static-sensitive electricity discharge can damage electronic components. To prevent any damage to your card, it is important to handle it very carefully. The following measures are generally sufficient to protect your equipment from static discharge.
Precautions :

- Keep the board in its anti-static bag until you are ready to install it.
- Touch a grounded metal object before you remove the board from the anti-static bag.
- Handle the board by its edges only; do not touch the printed circuit board.
- Do not place the card on top of your computer or any other metal surface.
- Make sure that the card is not accidentally touched by anyone else.
- Handle the card with care to avoid damage to the fragile electronic components mounted on the circuit board.

Note 1: *The card is shipped in anti-static packaging to avoid static damage. When unpacking the card, be sure the person handling the board is static-protected.*

Note 2: *A 2D card is REQUIRED ,as 3Dfx Voodoo2 provides no 2D or VGA functionality.*

You may find it helpful to have to hand the user's guide of the operating system used and any other documentation supplied with your PC and computer monitor.

Installation procedure

Switch off your computer and any hardware devices such as printers connected to your computer.

While the cables are still connected to your computer, you may want to label them in order to reconnect them properly once the installation process is finished.

Disconnect your monitor cable from your computer. Some cables may be attached to their connectors by small screws. Make sure to unscrew any secured cables before attempting to disconnect the cable from the back of the computer.

Remove the computer's cover. You may need to refer to the documentation supplied with your computer for instructions on how to do this. Keep the screws as you will need them later to secure the card.

If this is the first time you have opened up your computer, take a moment to familiarise yourself with the layout of the inside of the computer.

Locate an empty PCI expansion slot where you wish to install your video card. With your finger follow the expansion slot to the end closest to the outside of the computer. You will find there is a metal or plastic cover on the expansion slot where the edge of the card will eventually be attached. The slot cover will be attached by at least one screw. Unscrew the expansion slot cover and place the screws and slot cover in a container so as not to lose them.

Touch the bare metal chassis of your computer with the back of your hand to discharge any static that may have built up on you or your clothes.

Align the 3Dfx Voodoo2 with the slot you have chosen. Firmly press the card into the slot. You will need to use some pressure to push the card into position, but do not use excessive force. The PCI connectors should be on the bottom edge of the card that will be inserted into the PC expansion slot. Once in the slot, secure the video card using the screws removed previously.

Connect the lower port on 3Dfx Voodoo2 to the monitor port on your existing graphics board with the provided VGA pass-through cable.

Connect the upper port on 3Dfx Voodoo2 to your monitor with a standard monitor cable.

Replace the cover of your computer.

All cables connected to 3Dfx Voodoo2 should be properly shielded and comply with radio frequency interface standards.

Switch on your computer and your monitor.

Dual Board Installation for Scan Line Interleave (SLI)

- Shutdown the system and turn off the PC.
- Open the computer and locate two free PCI slots next to each other.
- Remove the cover for both slots from the computer chassis.
- Connect the SLI connector to both boards.
- Carefully position both boards into the slots then screw the boards in. Ensure the SLI connector is installed correctly.
- Replace the computer cover.
- Connect the lower port on 3Dfx Voodoo2 to the monitor port on your existing graphics board with the provided VGA pass-through cable.
- Connect the upper port on 3Dfx Voodoo2 to your monitor with a standard monitor cable.
- Switch on your computer and your monitor.

TV viewing (optional)

Your 3Dfx Voodoo2 might feature a TV connector (mini-DIN). To connect the board to a TV screen, plug the provided cable into the mini-DIN connector on the back of the board. You will also need an additional cable (not provided) to link the SCART TV connector.

Chapter 3 - Drivers Installation

Windows 95 (Standard edition and OSR2 release)
(Driver Version 4.10.01.0015)

Requirements:

- Windows 95 or later
- PC with a Pentium or similar processor
- 16MB of RAM minimum

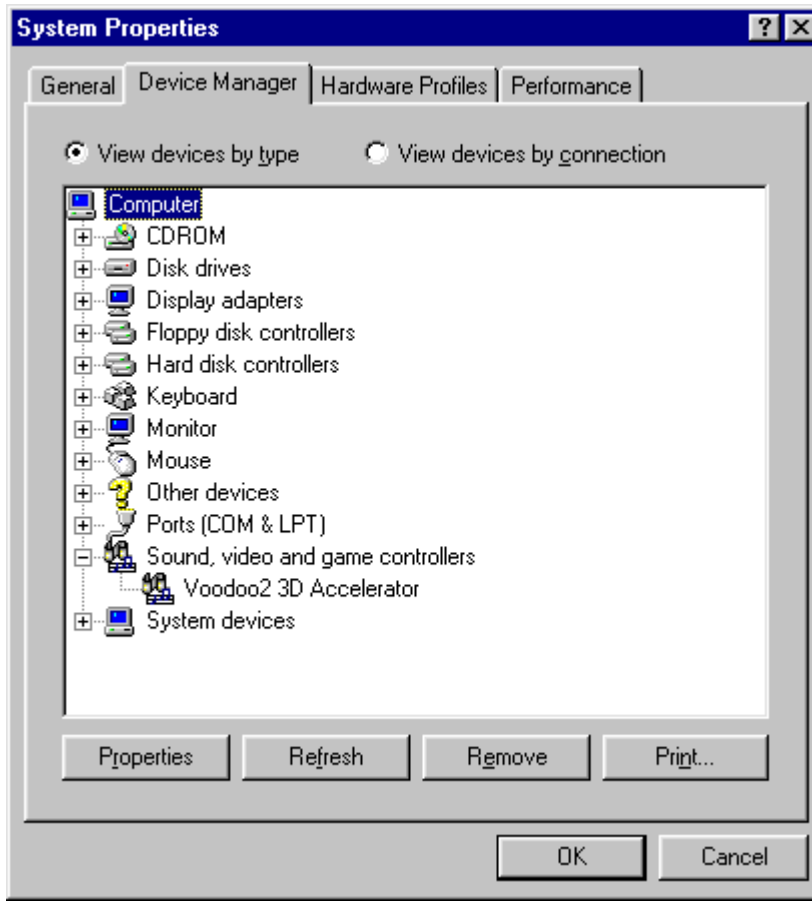
First Time Installation

1. Start Windows 95
2. Windows 95 will detect a "PCI Multimedia Device ", you need to:
3. Windows 95 Standard Release: Select "Use Driver from Manufacturer" and click OK
4. Windows 95 OEM SR2 or later: Click the Next Button on the Detection Dialog Box
5. Insert the CD TITLE in the drive and point the driver location to the Cd-Rom drive letter (for example: D:\) then click OK
6. (OEM SR2 or later users, just click Next)
7. You may then be prompted to insert the driver disk. Enter D:\ Drivers\3Dfx\3600\Win95
8. Windows will copy the drivers from the CD. Reboot the system when prompted
9. DirectX software must be installed to enable Direct3D support.

Upgrade Existing Voodoo2 Graphics Drivers:

1. Start Windows 95 and open the System Control Panel (Control Panel, System)
2. Click on the Device Manager tab, open the location of the 3Dfx Voodoo2, it will either be in “Sound Video and Game Controllers” or in “Unknown devices” as “PCI Multimedia Device”
3. Open the properties page for the 3Dfx Voodoo2
4. Click “Change” and choose Have Disk
5. Insert the installation CD in the D: drive and point the driver location to D:\ then click O K
6. Select the card from the list You may then be prompted to insert the driver Disk. Enter D:\ Drivers\3Dfx\3Dfx\3600\Win95
7. Windows will copy the drivers from the CD
8. Reboot the system when prompted
9. Install DirectX 5.0

Once you have installed the correct drivers, the 3Dfx Voodoo2 will be added to the “Sound, video and game controllers” devices section.



Windows NT 4.0 Glide Drivers

3Dfx Voodoo2 supports Windows NT 4.0 only for Glide.
The Glide 2.5 runtime installer must be used, earlier versions of Glide do not support Voodoo2.

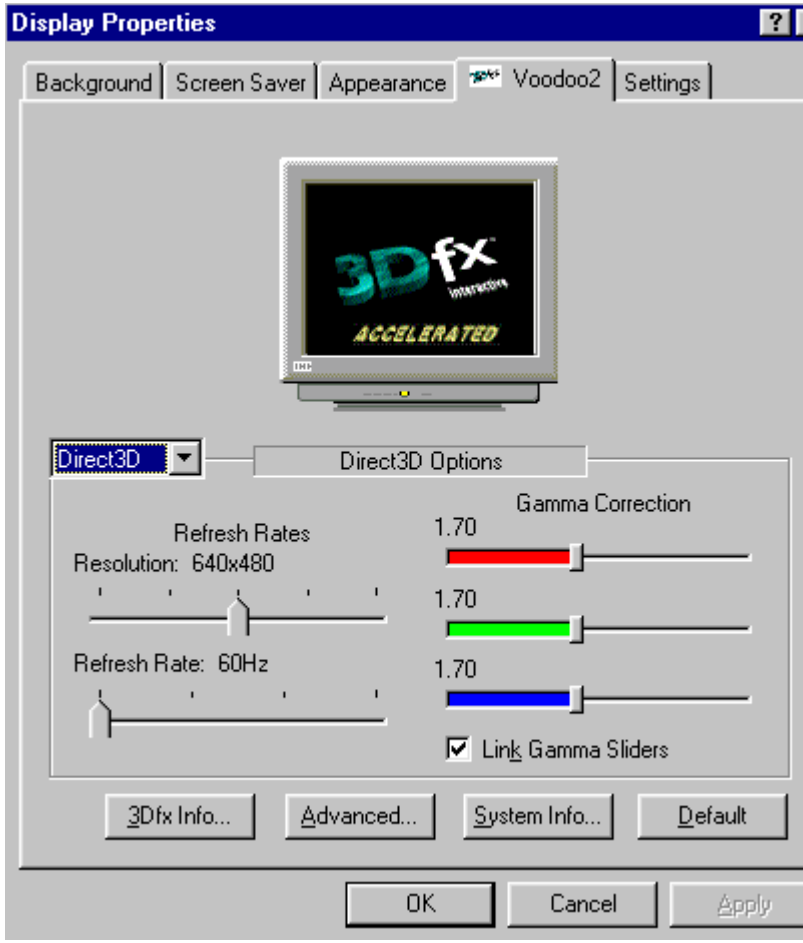
1. Start Windows NT 4.0 and run the Glide runtime installer while logged into an Administrator privilage account (for example: D:\ Drivers\3Dfx\3600\NT40\Setup.exe)
2. Follow the directions on the screen, when prompted reboot the system.

The installer will copy GLIDE2X.DLL to the Winnt \SYSTEM32 directory. Three device services are also copied to Winnt \SYSTEM32\ DRIVERS: GENPORT.SYS, MAPMEM,SYS and NTREMAP.SYS.
If Glide does not run under Windows NT, verify that the device services are started (use Control Panel, Devices and look for genport, mapmem and ntremap).
3Dfx Voodoo2 may not work across certain PCI bridge chips, the card may need to be run in a different slot.

*Direct3D is not currently supported under Windows NT.

Windows 95 and NT4.0 Display properties
(Driver Version 4.10.01.0015)

Once installed the correct drivers and reboot, the system will add one new section to the Display Properties of the Control Panel, named Voodoo2.



- **Direct3D/Glide/Both drop-down menu**

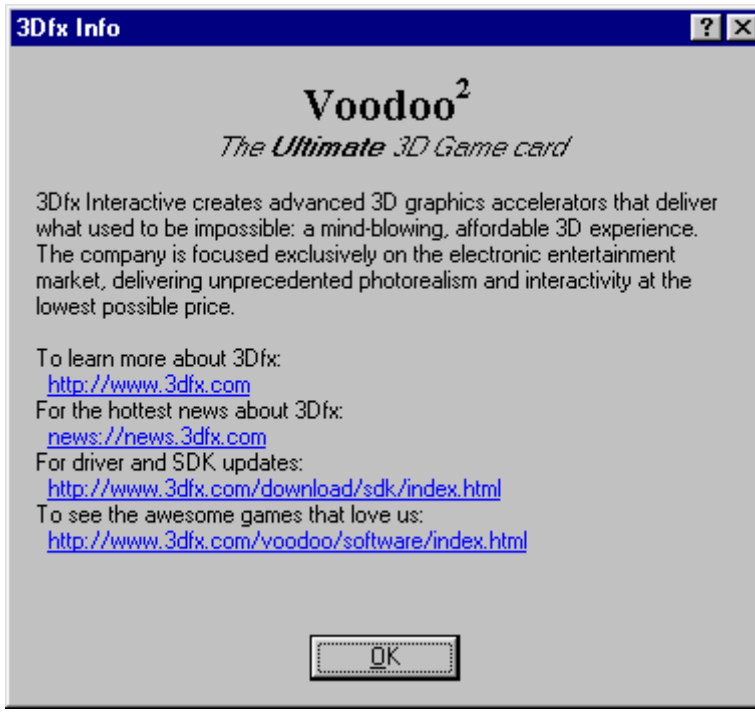
Allows you to change resolution and refresh rates for both modes
Switch between each other and choose your favourite settings
Please refer to *Resolution and RR table* at page 6 for supported modes.
Once selected the needed combination, click *Ok* or *Apply*

- **Gamma correction**

Allows you to set a specific value for Red, Green and Blue to optimise monitor viewing
Link Gamma Sliders: check this box to lock the three values. If checked, changes will affect all values proportionally
Once selected the needed combination, click *Ok* or *Apply*

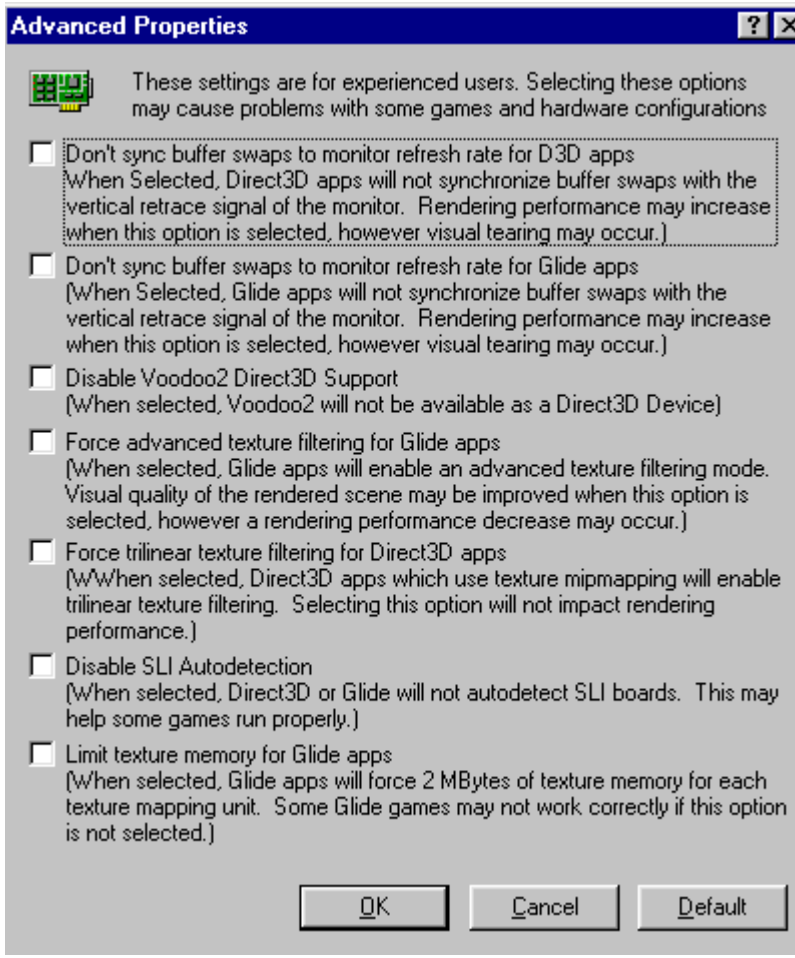
- **3Dfx Info**

This window is no helpful for any settings.
It briefly describes 3Dfx Interactrive core business and shows some helpful links on 3Dfx public web site


3Dfx Info
Voodoo²
The Ultimate 3D Game card
3Dfx Interactive creates advanced 3D graphics accelerators that deliver what used to be impossible: a mind-blowing, affordable 3D experience. The company is focused exclusively on the electronic entertainment market, delivering unprecedented photorealism and interactivity at the lowest possible price.
To learn more about 3Dfx:
http://www.3dfx.com
For the hottest news about 3Dfx:
news://news.3dfx.com
For driver and SDK updates:
http://www.3dfx.com/download/sdk/index.html
To see the awesome games that love us:
http://www.3dfx.com/voodoo/software/index.html
OK

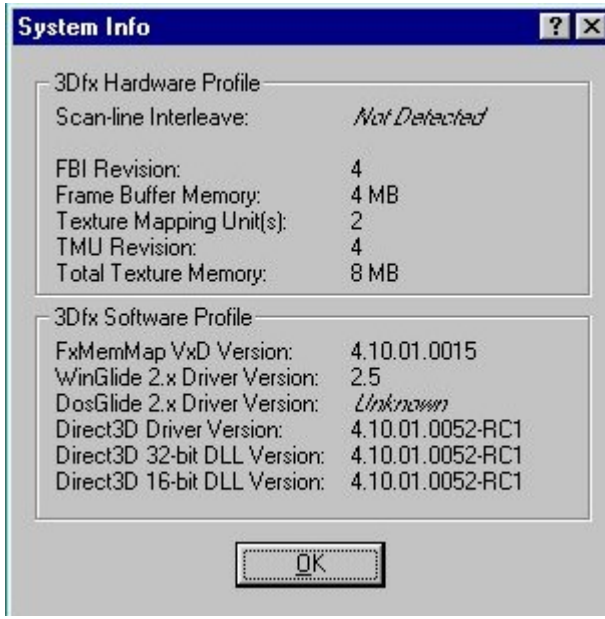
- **Advanced**

These settings are for experienced users. Please do not change any of them if you're not sure of their effects.


Advanced Properties
These settings are for experienced users. Selecting these options may cause problems with some games and hardware configurations
Don't sync buffer swaps to monitor refresh rate for D3D apps
When Selected, Direct3D apps will not synchronize buffer swaps with the vertical retrace signal of the monitor. Rendering performance may increase when this option is selected, however visual tearing may occur.)
Don't sync buffer swaps to monitor refresh rate for Glide apps
(When Selected, Glide apps will not synchronize buffer swaps with the vertical retrace signal of the monitor. Rendering performance may increase when this option is selected, however visual tearing may occur.)
Disable Voodoo2 Direct3D Support
(When selected, Voodoo2 will not be available as a Direct3D Device)
Force advanced texture filtering for Glide apps
(When selected, Glide apps will enable an advanced texture filtering mode. Visual quality of the rendered scene may be improved when this option is selected, however a rendering performance decrease may occur.)
Force trilinear texture filtering for Direct3D apps
(WWhen selected, Direct3D apps which use texture mipmapping will enable trilinear texture filtering. Selecting this option will not impact rendering performance.)
Disable SLI Autodetection
(When selected, Direct3D or Glide will not autodetect SLI boards. This may help some games run properly.)
Limit texture memory for Glide apps
(When selected, Glide apps will force 2 MBytes of texture memory for each texture mapping unit. Some Glide games may not work correctly if this option is not selected.)
OK
Cancel
Default

- **System Info**

This panel shows you some helpful information about hardware and software status of your current configuration. If you need support, do not forget to send us all these datas.



- **Default**

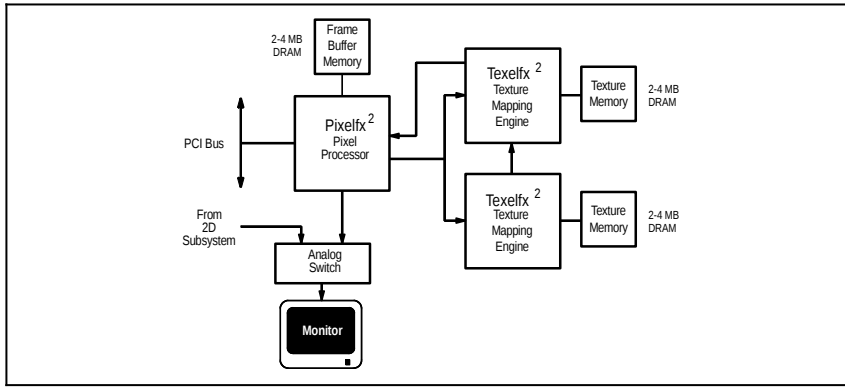
Click here to restore default values for all settings of Voodoo2 Control Panel.

Appendix

A – Inside the Voodoo2 (technical)

The 3Dfx Voodoo2, powered by Voodoo2 GraphicsTM from 3Dfx Interactive, takes 3D acceleration to the next level.
Voodoo2 Graphics is a second-generation 3D accelerator based on 3Dfx Interactive's groundbreaking Voodoo Graphics chipset, creating a new level of performance while retaining the same basic architecture. New features include higher internal clock speeds, 66 MHz PCI bus support, and full triangle parameter setup. The 3Dfx Voodoo2 works with any 2D graphics board, using a video pass-through connector to allow the two devices to share a monitor. The Voodoo2 Graphics chipset uses the industry-standard PCI interface to communicate with a PC or other host. The extendable architecture of the Voodoo2 Graphics chipset consists of two chips: the pixel buffer interface (Pixelfx2) and the texture-mapping unit (Texelfx2). The basic Voodoo2 Graphics system consists of one Pixelfx2 and one Texelfx2. Extended configurations can contain as many as two Pixelfx2 and four Texelfx2 units. Each chip has its own EDO DRAM memory buffer. Both chips use memory interleaving for maximum performance. In its base configuration, the Voodoo2 Graphics chipset consists of two rendering ASICs: Texelfx2 and Pixelfx2. Pixelfx2 is a PCI slave device. It performs all communications with the host CPU. The Pixelfx2 also performs triangle setup and implements 3D rendering functions: Gouraud shading, alpha blending, depth buffering, and dithering. The Pixelfx2 also includes the programmable fog logic and handles all linear frame buffer accesses. Additionally, the Pixelfx2 includes the video display controller. Finally, the Pixelfx2 combines its output pixels with those of the Texelfx2 texture-mapping unit to create the final output pixels. The Texel*fx*^{2} is in many ways similar to the Pixel*fx*^{2}. Both chips have triangle-rendering engines and triangle setup units to calculate triangle-engine parameters from triangle coordinates.

While the Pixel*fx*^{2}'s triangle engine generates Z-coordinates, RGB values, and alpha values for each pixel within a source triangle, the Texel*fx*^{2}'s triangle engine maps texels from its texture space to each pixel within a source triangle. Downstream from the triangle engine, the texel coordinates are used to fetch a block of texel data from the EDO DRAM texel buffer. After decompression, a single texel is created by filtering the block of texel data, using point sampling or MIP mapping. The resulting texel is sent back to the Pixel*fx*^{2}, to be combined with the output of the Pixel*fx*^{2}'s Gouraud-shading engine.
Up to two Texelfx2 chips can be used with a Pixelfx2. The TT bus chains multiple Texelfx2 chips together. With two Texelfx2 chips, many multi-pass operations are converted into single-pass operations, including detail texture mapping, projected texture mapping, and trilinear filtering. A Voodoo2 Graphics system can contain two Pixelfx2 units, each with 12 Texelfx2s. The two Pixelfx2 are slaved together in a scan-line interleaving system, with one Pixelfx2 rendering the even scan-lines of the triangles, and the other rendering the odd scan-lines in parallel with the first. This doubles the rendering rate of the system.



FCC Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two condition. (1). This device may not cause harmful interference. (2). This device must accept any interference received, including interference that may cause undesired operation

Warning:

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, used and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference in to radiate communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different form that to which the receiver in connected.
- Consult the dealer or an experienced radio/TV technician for help.

Notice:

(1) An Unshielded-type power cord is required in order to meet FCC emission limits and also to prevent interference to the nearby radio and television reception. It is essential that only the supplied power cord by used.

(2) Use only shielded cables to connect I/O devices to this equipment.3

(3) Changes or modifications not expressly approved by the party responsible for compliance could void the use's authority to operate the equipment.

Trademark Acknoeledgments

All brand names and trademarks are the property of their owners.